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Mr. P. Michael Payne  
Chief, Permits, Conservation and Education Division  
Office of Protected Resources  
National Marine Fisheries Service  
1315 East-West Highway  
Silver Spring, MD 20910-3225.

Dear Sir:

Thank you for the opportunity to comment on the Draft Programmatic Environmental Impact Statement (DPEIS) for seismic activities in the Beaufort and Chukchi Seas. I have a keen interest in the subject and perhaps some unique knowledge and perspective on the many issues discussed in the document.

For many years the Minerals Management Service (MMS) in Alaska has required that seismic operations post a lookout (observer) on seismic vessels operating in the Beaufort and Chukchi Seas. If a whale came within sight of the lookout, seismic operations were required to stop and not resume until the whale(s) passed from sight. Once the bowhead whale migration started, other restrictions were applied such as not starting the airguns during night time conditions or periods of low visibility. Many of these requirements were superseded by specific monitoring requirements contained in the NMFS LOA/IHA documents. In total these stipulations have been imposed on seismic operations for 25 years. No where else in the United States have seismic operators been required to conduct surveys under these or similar restrictions until very recently in the Gulf of Mexico. The reason these stipulations were imposed on Alaskan seismic operations was that the bowhead whale migration coincided with part of the seismic operating season, and very articulate and well funded native Alaskan communities were opposed to all seismic activities in marine waters. They believed that seismic operations might conflict with their traditional subsistence hunting of bowhead whales. I believe the stipulations have worked. There has not been any report of injury or death of whales as a result of seismic activity. The bowhead whale population has continued to grow. The subsistence hunt has continued to be successful. There is no justification for imposing additional restrictions on seismic activities. The restrictions proposed under Alternative 6 are consistent with previous years and are adequate to protect the bowhead whale and the subsistence hunt.

As a Supervisory Scientist with the MMS, I was responsible for the issuing of seismic permits in the Federal waters surrounding Alaska for approximately 25 years. I retired in June of 2004. I was asked by Western Geco, Inc. to look at the DPEIS and provide them

with technical advice. In reviewing this document, I found many issues which I felt need to be addressed. The best way to comment was through this letter.

My formal training is as an engineering geologist. I consider myself a scientist but not a biologist. However, I have dealt with biological issues for 30 years and have read much of the biological literature concerning marine mammals and more specifically bowhead whales since these data specifically related to my management of seismic permitting in the Bering, Chukchi and Beaufort Seas (BCB). As I am not a biologist, I will make every attempt not to speculate or extrapolate away from existing data; rather, I will stick to the facts.

During my tenure in this position I drafted and modified the stipulations imposed on seismic vessel operators. Stipulations were modified as a result of changes in the sound sources used by the seismic industry, changes in the knowledge base concerning the marine mammals and other living resources in the area of operations, and because of changes in the laws, regulations and viewpoints within MMS, the National Marine Fisheries Service (NMFS) and the Fish and Wildlife Service (F&WS).

Over the many years of my career I have heard strong statements from both sides of the issue concerning seismic noise and its effect on the marine environment. Many years ago a senior marine biologist within NMFS said that if a bowhead whale heard and reacted in any way to the sound of a seismic vessel it constituted an illegal take. Since seismic sounds could carry under ideal circumstances as far as 160 miles or more, a seismic vessel should not operate if there was a bowhead whale within 160 miles. I have had seismic operators say there have never been suspicions, let alone proof, that seismic operations have resulted in any mortality or permanent harm to any bowhead whales in the many years that operations have occurred in the Bering, Chukchi and Beaufort Seas. So, why do they have restrictions imposed upon their operations?

The seismic operator cited in the previous paragraph is correct. Seismic operations began in the Beaufort Sea approximately 40 years ago. During that time there has not been one reported case of physical harm or mortality to a bowhead whale as a result of Seismic activity. This is of particular note since the bowhead whale is probably one of the most studied species of marine mammals. Additionally, the level of seismic vessel activity in the past was considerably higher than is currently anticipated. (Please see the attached permit log.) This log does not include the seismic operations conducted in the Canadian Beaufort.

At the core of this controversy is the definition of “take” which is loosely defined in the Marine Mammal Protection Act (MMPA) as harassment. Interested parties have considerable latitude in interpreting the meaning. The NMFS is burdened with the responsibility of enforcing the Act and implementing regulations. To further complicate the issue, the bowhead whale is hunted for subsistence by the native populations living along the Beaufort and Chukchi Seas. They see oil and gas activities as a potential risk to their subsistence life style.

My job for many years was to sort my way through the laws, regulations, science, and strongly felt beliefs, and to accommodate biological and subsistence concerns while permitting the continuation of a viable and responsible oil and gas exploration program. The problem was greatly compounded by weather and ice which limits the seismic season to a few weeks a year. Specific locations may be blocked for the entire seismic season because of either moving or grounded pack ice. Traditionally, the month of September has been the most productive time for collecting seismic data in the Beaufort Sea. Unfortunately, by September the bowhead whales are beginning their annual migration from Canadian waters to the Bering Sea, which precipitates the beginning of the fall whale hunt. This convergence of activities has resulted in much of the conflict discussed in this document and is the reason for the DPEIS.

Based on my experience, I have the following comments regarding specific aspects of the DPEIS.

### **Questionable Use of Available Data**

The authors of the DPEIS have seized upon 20 km. as the radius at which bowhead whales avoid seismic vessels. Part of the “proof“ used to support the 20 km. avoidance zone in the DPEIS was the scarcity of sightings of bowhead whales from seismic vessels in the Beaufort Sea over the years. This is not consistent with the facts. The paucity of sighting of bowhead whales from seismic vessels is due to; (1) the relative scarcity of bowhead whales in the Beaufort Sea during most of the seismic acquisition season (They are mostly over in the Canadian Beaufort); (2) for many years seismic operations were shut down as the whale migration proceeded westward in order to prevent a take since regulations were not in place to allow a take; (3) the agreements between seismic operators and subsistence bowhead whalers specifying that seismic operators would avoid working in areas of active subsistence hunting, further minimizing the chance that there would be whale sightings from the seismic vessels. In contrast to the U.S. Beaufort Sea, in the Canadian Beaufort Sea in 2001, a seismic vessel reported sighting 262 bowhead whales. This is more sightings from one vessel than have been reported in the entire 40 year history of seismic operations in the U. S. Beaufort Sea area. The relative scarcity of Bowhead whales in the U. S. Beaufort Sea from August through early to mid September is further supported by the whale strike records of the subsistence hunters, and by the results of 26 years of aerial monitoring and numerous other scientific investigations.

### **Level of Seismic Vessel Activity**

I believe the level of seismic vessel activity of 12 concurrent operations as portrayed in the DPEIS is much too high. My experience would suggest that a maximum of 4 high energy source vessels would likely be acquiring streamer data in the combined area and moving back and forth between the Chukchi and Beaufort Seas as ice, weather and program priorities dictate. Possibly one or two on-bottom-cable (OBC) programs could be conducted in shallow waters in the Beaufort Sea. MMS regulations and practices require a single geophysical company with a single seismic vessel to have separate

permits to operate both in the Chukchi and Beaufort Seas; possibly resulting in 8 to 12 MMS permits being issued, but with only 4 to 6 seismic source vessels in operation concurrently throughout the combined Beaufort-Chukchi seas.

A typical program would be as follows. A seismic vessel must be mobilized from a distant port (Asia, Europe or the Gulf of Mexico), since there are no appropriate vessels in Alaska or the West Coast. The costs of mobilization are considerable. A company will attempt to acquire as much seismic data as possible -- first in the Chukchi and then in the Beaufort Sea. If at all possible, the vessel will be used in the Chukchi as soon as ice permits. Once ice clears sufficiently around Barrow and the proposed survey sites, the vessel may move into the Beaufort by early to late August. In some seasons, by as early as the last week in September, the vessels may be forced out of the Beaufort by ice encroachment around Barrow. If the program and the ice conditions permit, the seismic operator may continue to acquire data in the Chukchi Sea until the winter sea-ice forces the vessel south, returning to its home port.

### **Unwarranted Assumptions Leading to the Possibility of Lethal Take**

Several times, I have read over the portion of the DPEIS that addresses the significance of the mortal taking of 12 whales or of cow-calf pairs. As I stated earlier, I am not a biologist, but I have read a considerable amount of scientific literature on bowhead whales, and I am still struggling to understand the scientific rationale. First there is the Potential Biological Removal (PBR) number of 95. It seems to be based on a very low assumption of the current population of bowhead whales. From my reading of the literature and discussions with biologists, I thought that the accepted count was up around 12,000. That would be nearly a third higher than the number used to calculate the PBR. Then the maximum take permitted by subsistence hunting (82) is subtracted from the PBR even though the maximum take has never been achieved. One whale take is assumed from commercial fisheries. From all these uncertainties comes the fixed number 12 ( $95-82-1=12$ ) as the maximum that seismic activities could remove from the population stock before it would become significant. Using the commonly accepted population of 12,000, 60 subsistence takes (considerably higher than the average of 38), minus one for commercial fisheries take, the result is  $120-60-1 = 59$  takes before the removal from the population would be considered significant. Scientists and statisticians can argue about the input numbers, but everyone should agree that if input numbers are variable then the resulting answer to the equation should be expressed as a range of values.

The above paragraph is about the speculative and strident description of possible injury and death to bowhead whales as a result of seismic activities. This is neither supported by the results of nearly 40 years of seismic exploration in the Beaufort Sea, or 25 years of aerial monitoring and numerous scientific investigations. During the entire seismic exploration history there has not been a reported injury or mortality as a result of these activities. Furthermore, the bowhead whale population is robust and growing at a sustained rate, estimated at 3.1% to as high as 3.5% per year. The total population has reached or surpassed the low end of the estimated pre-commercial whaling numbers.

## **Unlikely Displacement from Biologically Significant Areas**

I encouraged environmental studies in the Canadian Beaufort Sea for many years because that was where the bulk of the bowhead whales are during much of the time in which there is a possibility of acquiring seismic vessel-whale interaction data (please see the paragraph below under **Timing**). As the administrator responsible for issuing seismic permits for MMS, I wanted these data so I could control the seismic operations in a more responsible manner with greater assurance that operations were being conducted as to minimize environmental impact. What was readily apparent to me was that there were abundant sightings of bowhead whales from vessels over a number of years in the Canadian Beaufort Sea, which provided a rich environment for acquiring seismic vessel-bowhead whale interaction data.

I can say for certain as it was stated year after year after year, when I tried to encourage biological researchers to acquire data in the Canadian Beaufort Sea rather than conduct the studies on the U. S. Beaufort Sea. “You cannot extrapolate biological observations of bowhead whales made in the Canadian Beaufort Sea to the U. S. Beaufort Sea. The populations in the Canadian Beaufort Sea are involved in biologically significant activities such as feeding, resting, and socializing whereas the whales in the U. S. Beaufort are migrating”. Now the biologists writing in the DPEIS seemed to have reversed the longstanding belief. Now bowhead whales are involved in biologically significant activities in the U.S. Beaufort and Chukchi Seas. These authors seem to believe that displacement from these critical biological activities may cause significant take.

Page IV-4 of the DPEIS states:

The threshold of 12 is based on the following premises: (a) whales aggregate in order to communicate and perform “biologically significant” behaviors (as defined by NRC (2005-3)), such as feeding, resting, socializing, mating, and calving; (b) aggregations of animals can also indicate an area of preferred habitat and locations where biologically significant behavior are likely to occurring; (c) disruption of these biologically significant behaviors and important habitats have a greater potential to population level effects (i.e., result in limiting reproductive potential or recruiting success, impeding important mother-calf bonding);...

This paragraph describes “biologically significant” behaviors such as that described as taking place in the Canadian Beaufort Sea. The Canadian Government has not had the same regulatory requirements for environmental studies that the U.S. Government has imposed on seismic operations; thus there is not as extensive a data base. However, an environmental study which was conducted as part of seismic exploration operations in 2001 contributed a large volume of data concerning the behavior of bowhead whales involved in the biologically significant behaviors of feeding, resting, and socializing -- as well as migrating. (“Marine Mammal and Acoustical Monitoring of Anderson Exploration Limited’s Open-Water Seismic Program in the Southwestern Beaufort Sea, 2001” by LGL Environmental Research Associates and JASCO Research Ltd., LGL

Final Report TA2618-1, May 2002). The study was modeled after the environmental monitoring studies conducted in the U.S. Beaufort Sea in support of seismic operations. As I mention elsewhere in this text, there were more sightings of bowhead whales from this one seismic vessel than all the sightings that MMS has received from all the seismic operators over a 40 year period. For these reasons it is important to review some of the findings and conclusions.

On page 4-29 of the report:

***Movement Type With vs. Without Seismic.***— We expected that, if whales were negatively influenced by seismic activity, they would tend to “swim away” or “flee” from the vessel, and that this effect would be most pronounced closer to the vessel (within 1000 m). In fact, a higher percentage of bowheads swam away from the vessel during non-seismic periods (60.9% of 133) than during periods when airguns were firing (50.4% of 129), considering all distances combined (Fig. 4.8A). The same trend was observed beyond the 1000 m radius (Fig. 4.8B,C) but the opposite trend was observed within the safety radius. However, relatively few ( $n = 7$ ) bowheads were observed within the safety radius when the airguns were active. Only one bowhead was classified as milling and no bowheads were seen “fleeing”. Overall, more whales were observed “swimming towards” and “swimming parallel” to the vessel during periods of seismic vs. non-seismic periods.

Overall, there was no indication that the likelihood for a bowhead to “swim away” was higher during seismic operations insofar as could be determined by visual observations from the seismic vessel. Overall, a higher percentage of bowheads were observed swimming away from the vessel during non-seismic periods than during periods when the array was firing. These results do not support the hypothesis that a higher proportion of bowheads exposed to airgun operations would move away from the vessel vs. bowheads sighted during periods with no airguns operating.

***“Pace” of Behaviour During Operations.***—Observers recorded a subjective measure of the “pace” at which bowheads were behaving (Table 4.5). The proportion of the bowheads recorded as behaving at a “sedate” pace was higher during non-seismic periods (45.3%) than during periods of airgun operation (30.5%). Very few bowheads were recorded as behaving at a “vigorous” pace. A large proportion of bowheads was not assigned a pace category as sightings were quite often far away from the vessel and it was difficult to assess the pace.

For the aerial monitoring portion of the study, the summary is on page 5-26 and 5-27,

***Summary.***—The aerial survey results showed that bowheads were regularly seen within 20 km of the operations area at times influenced by airgun pulses. Of 169 transect sightings during seismic conditions with good sightability, 30 (17.8%) were seen within 20 km of the most recent shotpoint. In fact, half (53 %) of the whale sightings within 20 km were actually seen within 10 km of the most recent shotpoint. The closest sighting occurred during “other” seismic conditions (initial seismic), 3.7 km from the most recent shotpoint.

And on 5-30.

***Summary.***—General activities of bowheads were similar at times that were and were not influenced by seismic. There was no evidence to support the hypothesis that resting at the surface might be more common in the presence of seismic pulses. There was also little indication of differences in swimming speed. These analyses are limited by the fact that they included observations at a wide variety of distances and locations relative to the area of seismic operations.

Finally, from the concluding summary of the entire study, on page 6-12.

The results from the present study in summer 2001 are markedly different from those obtained during similar studies during the autumn migration of bowheads through the Alaskan Beaufort Sea. For example, during the Alaskan studies only one bowhead whale was observed from the seismic vessel(s) during 6 seasons (1996-2001) of vessel-based observations compared with 280 seen from the *Geco Snapper* in 2001. The zone of avoidance around the airgun operations in 2001 was clearly much smaller (~2 km) than that observed (up to 20-30 km) in the Alaskan studies.

The 2001 seismic surveys occurred in an area and at times when bowheads are both summer residents (August and September) and autumn migrants (September-October). Most recent studies of the effects of seismic activities on bowheads have examined seismic effects during autumn migration through Alaskan waters. Less is known about the effects of seismic operations on bowheads on their summering grounds, when bowheads may be engaged primarily in feeding activities. Davis (1987) concluded that migrating bowheads during autumn may be more sensitive to industrial disturbance than bowheads on their summering grounds.

The occurrence of bowheads in the 2001 seismic exploration area from late August-mid September is consistent with observations from previous years. These waters are known to be used by bowheads as feeding areas, and the bowheads observed in these areas during 2001 were presumably engaged in feeding activity during most of the four week period that they were commonly seen there. That these whales were feeding, rather than migrating, may account for the markedly smaller zone of avoidance observed during 2001, compared to that observed in 1996-98 for whales migrating through Alaskan waters.

The results of this study certainly do not support the basis for the 120 dB and 160 dB safety zones further discussed below. Further, it supports the contention that bowhead whales are far less likely to be disturbed and or displaced from biologically significant areas than the DPEIS would lead a reader to believe. Finally, this study as well as many other monitoring efforts indicate that if bowhead whales are displaced briefly by the passing of a seismic vessel, they return to their normal behavior soon after the vessel has passed.

### **120 dB Safety Zone**

The concept of a 120 dB safety zone was proposed by a biologist within MMS. To my knowledge, there is no scientific basis to this number. 120 dB sound levels have been loosely tied to a distance of 20 km. from an active seismic vessel. This is based on one study with very specific parameters. The seismic vessel was doing OBC work and was operating close to shore. There were few bowhead whale sightings within 20 km. of the survey area whether or not the seismic sound source was operating or not. There are a large number of other studies that document the location of numerous bowhead whales within 20 km. of a seismic vessel, behaving normally. However, the preponderance of data has been ignored and the one very specific and limited study has been used to draw a general conclusion in the DPEIS that all whales avoid seismic activities at distances of 20 km. All the data collected so far supports the conclusion that under certain circumstances bowhead whales, particularly when migrating, may begin to avoid active seismic survey vessels from distances as far as 20 km., other bowhead whales approach seismic vessels to within a few hundred meters. There have been numerous sightings of bowhead whales at various ranges from seismic vessels. Within these ranges of distance from seismic vessels, the whales may be exposed to sound levels possibly as low, or lower than 100 dB to potential levels in excess of 180 dB. The nature of the response is also extremely

variable and often is difficult to attribute to seismic activities without applying statistical measures. The NMFS has chosen the 160 dB threshold as the point where a sufficient number of bowhead whales respond to seismic sounds to warrant a determination of take by harassment, a level B take under the MMPA. This type of take may be permitted if the seismic operator has been granted an Incidental Harassment Authorization, or a Letter of Authorization. The fact remains and bears repeating that there have been 40 years of marine seismic activity in the Beaufort Sea. During most of that time there have been stipulations imposed on the seismic operators requiring shutdown of operations if a whale came within a range of the vessel that might cause harm to a bowhead whale or other marine mammal. During those 40 years, there has never been a reported injury of death as a result of seismic operations.

### **160 dB Safety Zone**

The 160 dB zone would clearly fall within the 3 to 20 kilometer range mentioned in the previous paragraph. Herein lies the difficulty. What is harassment? When does it occur? Does the simple act of a migrating whale temporarily diverting around a strange sound in the ocean constitute a “take” under the MMPA? If it does then the NMFS has a much bigger problem. Every maritime vessel plying the waters of the coastal United States is generating sound levels in excess of 120 dB and probably in excess of 160 dB. For example, as a component of the seismic program in the Canadian Beaufort in 2001, the source levels of several vessels were measured including two 18 foot whaling boats equipped with outboard motors. The whaling boats produced sounds at the 120 dB in the 10 to 100 Hz range, building to 140 dB in the 100-1,000 Hz range. A 25 m. tug boat produced 160 dB. A 47 m. work boat produced 180 dB. and a 67 m. seismic vessel the MV Geco Snapper produced 180 dB, operating at a normal speed without air guns deployed. I am sure that it would be fair to say that much larger and possibly less well maintained maritime vessels plying the coastal waters of the United States produce sound levels higher than the MV Geco Snapper. Unless tug, barge and supply vessels bringing fuel and supplies to arctic villages are subject to similar operational restrictions as the seismic vessels then the Government would be applying a double standard. Expanded further, it would limit commercial vessel traffic along the West Coast during the gray whale migration. There would certainly be implications in the Gulf of Mexico, with its diverse marine life. Ultimately, I believe that the Government needs a better definition of what constitutes harassment.

For now I would suggest that it is fair to assume, under the current definition of harassment, that somewhere distal from the 180 dB zone there is an area where a majority of bowhead whales modify their course to maintain some distance from an unfamiliar sound source. This course change may constitute a take. There is nothing in the many studies over the last 20 or more years that would suggest that the level of take as measured by a deviation in course to avoid a seismic vessel would justify imposing more stringent restrictions on vessel operators than those suggested by alternative 6. These many studies involved individual whales, cow-calf pairs, small and large pods of whales. All resumed normal activity following a brief deviation in course and activity.

## **The Risks of Aerial Monitoring As a Component of Seismic Permit Stipulations**

A certain amount of site specific and regional aerial monitoring may be necessary both to comply with regulatory requirements and to insure that assumptions made for take authorizations are as expected. However, this requirement must be tempered by the knowledge that aerial monitoring is inherently dangerous. Flights are over water; the water temperature is near freezing; there is often a cloud cover with low ceilings with planes flying at 1,000 to 1,500 feet. Clearing the 120 dB safety zone and to a lesser degree the 160 dB zone would require considerable air time and a resulting elevated risk. The DPEIS discusses the cost in dollars with this alternative but not the possible cost of lives. With a seismic vessel sitting idle, there will be enormous pressure to fly under marginal conditions to clear a zone. I would hope that the DPEIS would give greater weight to the possible cost of human life associated with some of the proposed alternatives. Ultimately, the MMS regulations require that the permitting process does not cause or create hazardous or unsafe conditions.

## **Monitoring Verses Scientific Research**

There is no question that a certain amount of monitoring is necessary for compliance and to verify that the levels of permitted take are not being exceeded. However, we should not lose sight of the costs that can run into the millions of dollars for a single seasons monitoring program, and the safety risks associated with aerial monitoring. Those in charge should use care to insure that the study program is focused on addressing and verifying the assumptions that were used to support the issuance of a Letter of Authorization/Incidental Harassment Authorization and not to further the advancement of science through basic research.

## **Timing**

There is very little recognition throughout the DPEIS that bowhead whales are rarely found in the Beaufort and Chukchi Seas during much of the time that the seismic vessels will be operating. The vast majority of bowhead whales are over in the Canadian Beaufort Sea during July and August. It is not until September that large numbers of whales begin their migration west through the Beaufort Sea in response to cooling waters and advancing ice. This migration does not generally reach the Chukchi Sea until late September through October. These same conditions bring the seismic season to a close as vessels leaving the Beaufort must round Point Barrow before the ice moves in sufficiently to close the passage for vessels other than ice breakers. Over the 25 years that I managed the seismic permitting program, I tried repeatedly to coordinate aerial monitoring and seismic activities in order to acquire solid data on interaction between seismic vessels and bowhead whales. In nearly all cases these attempts failed because, as mentioned above, the formation of sea ice in the fall that initiates the whale migration when coupled with increasing inclement weather conditions also ends the seismic acquisition season.

## **High Resolution Surveys**

Treating high resolution surveys the same as exploration seismic surveys is totally inappropriate. The energy level of a typical high resolution survey is 2 to 3 orders of magnitude less than a typical exploration seismic survey and is confined to a much smaller area and a shorter duration. Expressed in terms of perceived sound levels, a 20 inch airgun array, such as might be used in a high resolution seismic survey, was recorded at 180 db at 124 m. from the vessel. Whereas, a high energy seismic vessel, using a 3,100 cubic inch airgun array, may generate 180 dB at 1,200 meters from the source. It is like comparing a rifle to an artillery piece. Some high resolution seismic surveys employ systems that produce no more energy than the fathometers on modern seagoing vessels. Even when deploying small air guns, restrictions on the activity should be scaled to the energy produced by the sound source. To some degree this is acknowledged in section III.F.3.f.6(a). However, elsewhere in the DPEIS it appears that high resolution programs are treated the same as the much higher energy 2D/3D seismic exploration activities.

### **Failure to Consider the Rapid Feedback of Real-time Monitoring and Annual Review of Environmental Data Collection**

There is onboard each seismic source vessel, real-time monitoring of the operation. In addition, every monitoring program is reviewed annually. If any injury or fatality became apparent as a result of seismic activities, MMS and NMFS regulations and permits require immediate reporting. If warranted, the seismic operations will be required to stop. If upon annual review, unanticipated, subtle, adverse affects on the bowhead whales is detected then the next year's seismic operating plan can be adjusted accordingly. With this in mind, there is little need to speculate on very unlikely or worst case scenarios since even small departures from the basic assumptions used to develop the LOA/IHA should show up quickly. Considering the historical record, the substantial body of scientific data available, a rapid feedback mechanism to update and correct the underlying scientific assumptions and the administrative and regulatory flexibility that MMS and NMFS have to adjust the restrictions on seismic operators, the 120 dB and the 160 dB safety zones in Alternatives 3-5, 7-8 and the blackout zones in Alternative 8 are unwarranted.

### **Summary and Conclusions**

Over the last 25 years, I have worked closely with Ron Morris and later with Brad Smith with the NMFS to develop a set of meaningful and realistic stipulations that would both protect bowhead whales, and minimize the chance of conflict with subsistence hunting efforts. I believe our efforts have been very successful. I do not see anything in the scientific data or administrative record that would support imposing greater restrictions on the seismic industry. The imposition of greater restrictions during the 2006 seismic season resulted in cancellation of seismic programs. Seismic data are a key component of oil and gas exploration. Arguably, it is of National strategic importance that the oil and gas potential of the United States is assessed. There is no question that the oil and gas exploration efforts must be conducted in an environmentally sound manner.

However, it is also important not to burden seismic companies with regulatory impediments which incrementally add little or nothing to further protect bowhead whales and other marine mammals and come at considerable cost and risk to human life. I am in full support of implementation of Alternative 6 in the DPEIS. The other proposed alternatives are unnecessary, burdensome, and are not justified by the wealth of scientific data in hand.

Sincerely,

Gerald B. Shearer

Cc. Mr. John Goll, Regional Director, Minerals Management Service, Alaska Region  
(john.goll@mms.gov)

Attachment